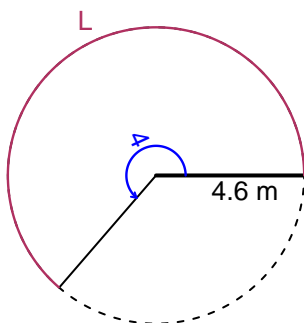# Trig Final (Practice v5)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 4.6 meters. The angle measure is 4 radians. How long is the arc in meters?
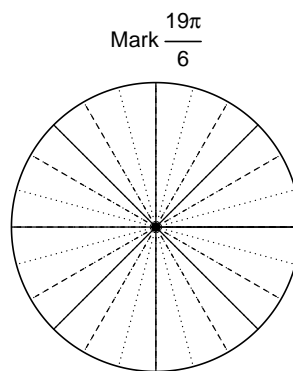

Question 2

Consider angles $\frac{-11\pi}{4}$ and $\frac{19\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-11\pi}{4}\right)$ and $\cos\left(\frac{19\pi}{6}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-11\pi}{4}$

Find $\sin(-11\pi/4)$

Mark $\dfrac{19\pi}{6}$
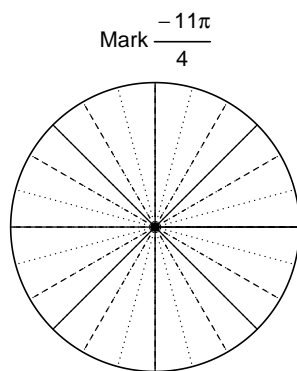
Find $\cos(19\pi/6)$

Question 3

If $\tan(\theta) = \frac{-56}{33}$, and θ is in quadrant IV, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 2.42 Hz, a midline at $y = 3.93$ meters, and an amplitude of 5.11 meters. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).